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Monitoring enhances protection of eastern spadefoot toad at Cape Cod

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Spadefoot toad, Cape Cod National Seashore, Massachusetts.

The eastern spadefoot toad (*Scaphiopus h. holbrooki*, photo), one of 12 species of amphibians found at Cape Cod National Seashore, Massachusetts, is one of the rarest and least observed amphibians in the Northeast. Derived from desert ancestors, spadefoots are “explosive” breeders. Taking advantage of infrequent windows of opportunity, they emerge at night from underground burrows to breed after very heavy rains in spring and summer, moving en masse to temporary pools. Eggs hatch within one week and, providing the pool does not dry out, larvae metamorphose in as little as two weeks. Limited by their burrowing habits to sandy and loamy regions, spadefoots occur in the Northeast along the coastal plain and river valleys. Though patchily distributed, historically they were generally abundant where present. In the last century spadefoots declined regionally because of habitat loss. They are now listed as a protected species by most northeastern states, including Massachusetts where they are “threatened.”

As recently as the year 2000, little was known about the eastern spadefoot toad at Cape Cod National Seashore except for its occurrence and distribution. Incidental observations suggested that the Province Lands, a landscape of vast sand dunes and numerous shallow ponds (ideal for spadefoots), might support significant numbers; however, a clearer picture of the toad’s status only began to emerge after the establishment of the park’s Inventory and Monitoring Program in 1996. Data collected in 2001 during field testing of amphibian monitoring protocols by a University of Rhode Island field crew indicated that the Province Lands area supports perhaps the largest concentration of eastern spadefoot toads in the Northeast. Unfortunately, much of this data involved animals killed on park roads on rainy nights.

Recognizing that the park supported a regionally significant population of the species, and that mortality on park roads was a potentially significant threat, park staff set out to develop a plan for temporary road closures in the Province Lands. However, one key question needed to be answered. The Province Lands encompass the Provincetown Airport and Race Point, the beach access for off-road vehicles (ORV). Both areas require access at all times. Of the two roads serving these locations, which— when closed—would prevent the greatest toad mortality?

Follow-up monitoring in 2003 found the vast majority of spadefoots on Province Lands Road, which bisects a temporary wetland they prefer. The additional study also supplied better data on the weather conditions associated with their movements. Armed with a better ecological understanding of local spadefoot life history, the park could proceed to develop an effective plan for reducing road mortalities and maintaining essential access to the airport and ORV area. Monitoring data were also combined with other information about spadefoot ecology to develop interpretive materials and a community communication strategy as part of the closure plan. Some of this interpretive material has been used by the local media and incorporated into a trolley company's tour narrative of Provincetown.

Since the park enacted the plan in 2004, overnight road closures have been implemented two to three times per year. Public reaction has been mostly positive, with few complaints. Though road kill of wildlife remains a general concern in the park, information generated by the monitoring program has enabled park staff to recognize the spadefoot problem, develop a targeted and effective response, and capitalize on an opportunity for public education at the same time.

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